UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER OF PATENTS AND TRADEMARKS
Washington, D.C. 20231

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
09/[illegible]	06/[illegible]/00	STUELPNAGEL J	A-67616-2/JT

HM12/0903

FLEHR HOHBACH TEST ALBRITTON & HERBERT L
FOUR EMBARCADERO CENTER
SUITE 3400
SAN FRANCISCO CA 94111-4187

EXAMINER	
TURMAN, R	

ART UNIT	PAPER NUMBER
1655	

DATE MAILED: 09/03/01

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary	Application No.	Applicant(s)	
	09/636,387	STUELPNAGEL ET AL.	
	Examiner	Art Unit	
	BJ Forman	1655	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *18 June 2001* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *49-54 and 61-75* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☐ Claim(s) *49-54 and 64-75* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) *5 6 8* .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

1. Applicant's election without traverse of Group VI, Claims 49-54, filed 18 June 2001 in Paper No. 9 is acknowledged. Applicant's response to the Restriction Requirement which canceled Claims 1-48 and 55-60 and added new Claims 61-75 is acknowledged.

Claims 49-54 and 61-75 are pending.

Claim Objections

2. Claims 49, 61 and 68 are objected to because of the following informalities:

a. Claims 49 and 61 are objected to because in step a), ii) a semi-colon is improperly placed after "agent".

b. Claim 68 is objected to because "bind" is incorrectly spelled.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claim 68 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 68 is indefinite in the recitation "such that the identification of the bioactive agent can be elucidated" because "such that" and "can be" are non-specific descriptors and therefore it is unclear whether the recitation is a method step for elucidating the bioactive agent or merely a characteristic of the identifier binding ligand. It is suggested that the claim

be amended to clarify e.g. replace "such that" with "whereby" and replace "can be" with "is" (page 18, lines 4-23).

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

6. Claims 49, 53, 54, 61, 62 and 65-68 are rejected under 35 U.S.C. 102(e) as being anticipated by Walt et al. (U.S. Patent No. 6,023,540, filed 14 March 1997) in view of the definitions of Morris ed. (Academic Press Dictionary of Science and Technology, Academic Press, 1992, page 821).

Regarding Claim 49, Walt et al. disclose a method of determining the presence of a target analyte in a sample comprising: acquiring a first data image of a random array composition comprising: a substrate with a surface comprising discrete sites and a population of microspheres comprising at least a first and a second sub-population each comprising a bioactive agent wherein said microspheres are randomly distributed on said surface such that said discrete sites contain microspheres (Column 4, lines 4-14); registering said first data image to create a registered first data image; contacting said random array with said sample; acquiring a second data image from said array with said sample; registering said second data image to create a registered second data image; and comparing said first and said second registered data images to determine the presence or absence of said target analyte (Column 13, line 46-Column 14, line 58 and Claim 39).

Regarding Claim 53, Walt et al. disclose the method wherein the bioactive agents are proteins (Column 13, lines 48 and 63).

Regarding Claim 54, Walt et al. disclose the method wherein the bioactive agents are nucleic acids (Claim 50).

Regarding Claim 61, Walt et al. disclose a method of determining the presence of a target analyte in a sample comprising: providing a first data image of a random array comprising: a substrate with a surface comprising discrete sites and a population of microspheres comprising at least a first and a second sub-population each comprising a bioactive agent wherein said microspheres are randomly distributed on said surface such that said discrete sites contain microspheres (Column 4, lines 4-14); contacting said random array with said sample; acquiring a second data image from said array with said sample; registering said second data image to create a registered second data image; and comparing said first and said second registered data images to determine the presence or absence of said target analyte (Column 13, line 46-Column 14, line 58 and Claim 39).

Regarding Claim 62, Walt et al. disclose the method of Claim 49 wherein the substrate is selected from the group consisting of glass and plastic i.e. optical fibers (Abstract) which are comprised of glass or plastic as defined by Morris ed. (page 821).

Regarding Claim 65, Walt et al. disclose the method of Claims 53 and 54 wherein the substrate is selected form the group consisting of glass and plastic i.e. optical fibers (Abstract) which are comprised of glass or plastic as defined by Morris ed. (page 821).

Regarding Claim 66, Walt et al. disclose the method of Claims 49 and 62 wherein each sub-population comprises a unique optical signature (Column 4, lines 9-14).

Regarding Claim 67, Walt et al. disclose the method wherein the said unique optical signature is a bleed-through signature i.e. the signal is obtained from multiple wavelengths (Column 14, line 59-Column 15, line 15).

Regarding Claim 68, Walt et al. disclose the method of Claims 49 and 62 wherein each sub-population comprises an identifier binding ligand that will bind a decoder binding ligand such that the identification of the bioactive agent can be elucidated i.e. enzyme and substrate whereby the enzyme is identified in the presence of the substrate (Column 13, line 46-Column 14, line 58).

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

8. Claims 50-52, 63-65 and 69-75 are rejected under 35 U.S.C. 103(a) as being unpatentable over Walt et al. (U.S. Patent No. 6,023,540, filed 14 March 1997) in view of Augenlicht (U.S. Patent No. 4,981,783, filed 16 April 1986) and in view of the definitions of Morris ed. (Academic Press Dictionary of Science and Technology, Academic Press, 1992, page 821).

Regarding Claim 50, Walt et al. teach a method of determining the presence of a target analyte in a sample comprising: acquiring a first data image of a random array composition comprising: a substrate with a surface comprising discrete sites and a population of microspheres comprising at least a first and a second sub-population each comprising a bioactive agent wherein said microspheres are randomly distributed on said surface such that said discrete sites contain microspheres (Column 4, lines 4-14); registering said first data image to create a registered first data image; contacting said random array with said sample; acquiring a second data image from said array with said sample; registering said second data

image to create a registered second data image; and comparing said first and said second registered data images to determine the presence or absence of said target analyte (Column 13, line 46-Column 14, line 58 and Claim 39) wherein the random array comprises a fiber optic bundle (Column 3, lines 17-30) but they do not teach the registration utilizes a fiducial fiber. However, fiducials were well known and practiced in the art at the time the claimed invention was made as taught by Augenlicht. Specifically, Augenlicht teaches a similar method for determining the presence of a target comprising a substrate with a surface comprising discrete sites and at least a first and second population each comprising a bioactive agent distributed on the surface; acquiring a data image to create a registered image and comparing registered images to determine the presence of said target wherein the registered image utilizes a fiducial marking (Column 7, lines 18-46) wherein the fiducial markings permit rapid and accurate automated scanning to thereby identify targets rapidly and accurately (Column 8, lines 15-29). It would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to modify the substrate surface of Walt et al. by incorporating into the substrate fiducial markers as suggested by Augenlicht to thereby reduce operator time and human error by providing a substrate which permits automated scanning for the obvious benefit of rapid and accurate target analysis as suggested by Augenlicht (Column 8, lines 15-29). The skilled practitioner in the art would have been further motivated to apply the fiducial marker teaching of Augenlicht to the fiber bundle of Walt et al. to utilize a fiber as the fiducial marker and to incorporate a fiducial fiber into the fiber optic bundle substrate of Walt et al. to thereby scan the substrate once to detect both the analyte-fiber and fiducial-fiber using the same detection method for the obvious benefit of eliminating the need to scan the substrate separately for both the analyte and fiducial.

Regarding Claim 51, Walt et al. teach the random array comprises a fiber optic bundle (Column 3, lines 17-30) but they do not teach the first data image utilizes a fiducial fiber. However, fiducials were well known and practiced in the art at the time the claimed invention

was made as taught by Augenlicht and discussed above. It would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to apply the fiducial marker teaching of Augenlicht to a microsphere on the surface of the substrate of Walt et al. to utilize a microsphere as the fiducial marker and to incorporate a fiducial microsphere into the substrate of Walt et al. to thereby scan the substrate once to detect both the analyte-microsphere and the fiducial-microsphere using the same detection method for the obvious benefit of eliminating the need to scan the substrate separately for both the analyte and fiducial.

Regarding Claim 52, Walt et al. do not teach the registration utilizes a fiducial fiber. However, fiducials were well known and practiced in the art at the time the claimed invention was made as taught by Augenlicht and discussed above and Augenlicht teaches the data image utilizes a fiducial template (Fig. 1). It would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to modify the substrate of Walt et al. by utilizing a fiducial template as suggested by Augenlicht to thereby reduce operator time and human error by providing a substrate which permits automated scanning for the expected benefit of rapid and accurate target analysis as suggested by Augenlicht (Column 8, lines 15-29).

Regarding Claims 63 and 64, Walt et al. do not teach a fiducial edge. However, fiducials were well known and practiced in the art at the time the claimed invention was made as taught by Augenlicht and discussed above. Additionally, Augenlicht teaches the data image utilizes a fiducial edge and wherein at least a first edge of the array is a fiducial edge i.e. upper right edge, upper left edge and lower left edge (Fig. 1). It would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to modify the substrate of Walt et al. by utilizing a fiducial edge as suggested by Augenlicht to thereby reduce operator time and human error by permitting automated scanning of the substrate for the expected benefit of rapid and accurate target analysis as suggested by Augenlicht (Column 8, lines 15-29).

Regarding Claim 65, Walt et al. teach the method wherein the substrate is selected form the group consisting of glass and plastic i.e. optical fibers (Abstract) which are comprised of glass or plastic as defined by Morris ed. (page 821).

Regarding Claim 69, Walt et al. do not teach the array comprises fiducials. However, fiducials were well known and practiced in the art at the time the claimed invention was made as taught by Augenlicht and discussed above and Augenlicht teaches the similar array comprises at least three fiducials (Fig. 1). It would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to apply the multiple fiducials on the array of Augenlicht to the substrate of Walt et al. to thereby reduce operator time and human error by permitting automated scanning of the substrate for the expected benefit of rapid and accurate target analysis as suggested by Augenlicht (Column 8, lines 15-29).

Regarding Claim 70, Augenlicht teaches the similar array comprises at least one fiducial wherein the position of the fiducial on the substrate facilitates analysis and identification of the bioagent by identifying their position relative to the fiducial (Column 7, lines 33-35) but they do not teach that one fiducial has a different shape from the others. It would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to modify the substrate of Walt et al. by utilizing a fiducial as suggested by Augenlicht to thereby reduce operator time and human error by providing a substrate which permits automated scanning for the expected benefit of rapid and accurate target analysis as suggested by Augenlicht (Column 8, lines 15-29). The skilled practitioner in the art would have been further motivated to modify the fiducial markers by providing at least one fiducial having a different shape to thereby obtain a substrate having fiducials of differing and identifiable shape (e.g. a different identifiable size in each coroner) to thereby identify the target analyte by detecting the shape and position of the most proximal fiducial for the obvious benefit of further facilitating identification of the bioagent on the substrate.

Regarding Claim 71, Augenlicht teaches the similar array comprises at least one fiducial wherein the position of the fiducial on the substrate facilitates analysis and identification of the bioagent by identifying their position relative to the fiducial (Column 7, lines 33-35) but they do not teach that one fiducial has a different color from the others. It would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to modify the substrate of Walt et al. by utilizing a fiducial as suggested by Augenlicht to thereby reduce operator time and human error by providing a substrate which permits automated scanning for the expected benefit of rapid and accurate target analysis as suggested by Augenlicht (Column 8, lines 15-29). The skilled practitioner in the art would have been further motivated to modify the fiducial markers by providing at least one fiducial having a different color to thereby obtain a substrate having fiducials of different color (e.g. each fiducial detectable by different wavelengths placed in each coroner) to further facilitate identification of the bioagent on the substrate by detecting the emission along with position of the most proximal fiducial.

Regarding Claim 72, Walt et al. teach the random array comprises a fiber optic bundle (Column 3, lines 17-30) but they do not teach the first data image utilizes a fiducial fiber. However, fiducials were well known and practiced in the art at the time the claimed invention was made as taught by Augenlicht and discussed above. It would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to apply the fiducial marker teaching of Augenlicht to a microsphere on the surface of the substrate of Walt et al. to utilize a microsphere as the fiducial marker and to incorporate a fiducial microsphere into the substrate of Walt et al. to thereby scan the substrate once to detect both the analyte-microsphere and the fiducial-microsphere using the same detection method for the obvious benefit of eliminating the need to scan the substrate separately for both the analyte and fiducial. It would have been further obvious to one of ordinary skill in the art at the time the claimed invention was made to apply the 3 fiducials on the array of Augenlicht to the substrate of Walt et al. to thereby reduce operator time and human error by permitting automated

scanning of the substrate for the expected benefit of rapid and accurate target analysis as suggested by Augenlicht (Column 8, lines 15-29).

Regarding Claim 73, Augenlicht teaches the similar array comprising at least one fiducial wherein the position of the fiducial on the substrate facilitates analysis and identification of the bioagent by identifying their position relative to the fiducial (Column 7, lines 33-35) but they do not teach that one fiducial has a different shape from the others. It would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to apply the fiducial marker teaching of Augenlicht to a microsphere on the surface of the substrate of Walt et al. to utilize a microsphere as the fiducial marker and to incorporate a fiducial microsphere into the substrate of Walt et al. to thereby scan the substrate once to detect both the analyte-microsphere and the fiducial-microsphere using the same detection method for the obvious benefit of eliminating the need to scan the substrate separately for both the analyte and fiducial. The skilled practitioner in the art would have been further motivated to modify the fiducial markers by providing at least one fiducial having a different size to thereby obtain a substrate having fiducials of differing and identifiable size (e.g. a different identifiable size in each coroner) to thereby identify the target analyte by detecting the size and position of the most proximal fiducial for the obvious benefit of further facilitating identification of the bioagent on the substrate.

Regarding Claim 74, Augenlicht teaches the similar array comprises at least one fiducial wherein the position of the fiducial on the substrate facilitates analysis and identification of the bioagent by identifying their position relative to the fiducial (Column 7, lines 33-35) but they do not teach that one fiducial has a different color from the others. It would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to apply the fiducial marker teaching of Augenlicht to a microsphere on the surface of the substrate of Walt et al. to utilize a microsphere as the fiducial marker and to incorporate a fiducial microsphere into the substrate of Walt et al. to thereby scan the substrate once to detect both the analyte-

microsphere and the fiducial-microsphere using the same detection method for the obvious benefit of eliminating the need to scan the substrate separately for both the analyte and fiducial. The skilled practitioner in the art would have been further motivated to modify the fiducial markers by providing at least one fiducial having a different color to thereby obtain a substrate having fiducials of different color (e.g. each fiducial being detectable by different wavelengths in each coroner) to thereby identify the target analyte by detecting the color and position of the most proximal fiducial for the obvious benefit of further facilitating identification of the bioagent on the substrate.

Regarding Claim 75, Augenlicht teaches the similar array comprises at least one fiducial wherein the position of the fiducial on the substrate facilitates analysis and identification of the bioagent by identifying their position relative to the fiducial (Column 7, lines 33-35) but they do not teach that one fiducial has a different shape from the others. It would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to apply the fiducial marker teaching of Augenlicht to a microsphere on the surface of the substrate of Walt et al. to utilize a microsphere as the fiducial marker and to incorporate a fiducial microsphere into the substrate of Walt et al. to thereby scan the substrate once to detect both the analyte-microsphere and the fiducial-microsphere using the same detection method for the obvious benefit of eliminating the need to scan the substrate separately for both the analyte and fiducial. The skilled practitioner in the art would have been further motivated to modify the fiducial markers by providing an unlabeled fiducial to thereby obtain a substrate having labeled and unlabeled fiducials (e.g. fiducials detectable by the label and fiducial detectable by size and/or shape) to thereby identify the target analyte by detecting the size and/or shape of the unlabeled fiducial relative to the position of the most proximal labeled fiducial for the obvious benefit of further facilitating identification of the bioagent on the substrate.

Conclusion

9. No claim is allowed.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to BJ Forman whose telephone number is (703) 306-5878. The examiner can normally be reached on 6:45 TO 4:15.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gary Jones can be reached on (703) 308-1152. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-4242 for regular communications and (703) 308-8724 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0196.

BJ Forman, Ph.D.
August 31, 2001